



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/940,127	08/27/2001	Trent Gray-Donald	CA920010066US1	3913

25259 7590 09/21/2004

IBM CORPORATION
3039 CORNWALLIS RD.
DEPT. T81 / B503, PO BOX 12195
RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

LAO, SUE X

ART UNIT	PAPER NUMBER
----------	--------------

2126

DATE MAILED: 09/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/940,127

Applicant(s)

GRAY-DONALD ET AL.

Examiner

S. Lao

Art Unit

2126

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16-20 is/are allowed.
- 6) ☒ Claim(s) 1,2,15 and 21 is/are rejected.
- 7) ☒ Claim(s) 3-14 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

1. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 1-21 are presented for examination.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Crelier (U S Pat. 6,151,703).

As to claim 21, Crelier teaches a method for creating a hybrid application (caller) for execution by a computer, said hybrid application comprising interpreted code (interpreted) and compiled code (compiled), said hybrid application comprising a function (caller method), said method comprising:

creating a first function portion (compile code slot 563 part of method block 560) for access by an interpreter for interpreting a call in said interpreted code to said function (call back into Java runtime interpreter for interpretation of the callee method);
and

creating a second function portion (invoker slot 564 part of method block 560) for access during execution of said compiled code, said access for a call in said compiled code to said function (result in invocation of the compiled version of the method). See col. 11, lines 19-64; fig. 4, 5.

While Crelier teaches that the first function portion and the second function portion are parts of an overall hybrid method dispatch table (method block 560), Crelier does not explicitly name the first function portion and the second function portion respectively as the first function table and the second function table. This, however, would have been an obvious choice in naming data structures.

As to claim 1, note the discussion of claim 21 for first virtual function table / first function table and second virtual function table / second function table. Crelier further teaches a computer programming environment (development system) supporting virtual function calls (v-table, col. 13, line 12) [also inherent to Java, the implementation language in Crelier] and supporting both interpretation of functions (interpretation of the callee method) in a set of functions (callee methods) and execution of compiled code representing functions in the set of functions (invocation of the compiled version of the callee method), the set of functions being referenced in one or more loaded classes (caller) in a set of computer code (caller method, fig. 5). Crelier further teaches computer program product comprising a computer usable medium having computer readable code means embodied in said medium [inherent to Crelier]. Crelier further teaches means for generating (development system).

While Crelier does not explicitly teach the generation is performed for each loaded class, this would have been an obvious choice in view of the typical class data structures of object-oriented languages such as C++ and Java which provide each class with a v-table / function dispatch table.

As to claim 2, Crelier as modified teaches the first virtual function table comprises interpretation entries, each interpretation entry being associated with a function in the set of functions (callee methods) and pointing to a corresponding function data structure (pointer 563, fig. 5), and the second virtual function table comprises compilation entries each compilation entry being associated with a function in the set of

Art Unit: 2126

functions (callee methods), and pointing to either a corresponding block of executable code (pointer 564) (invocation of the compiled version of the method) or to a corresponding block of interpreter transition code. See col. 11, lines 19-64; fig. 5. It is noted that the two alternatives linked by 'or' is interpreted as requiring one of the two.

5. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Crelier (U S Pat. 6,151,703) in view of Stoodley et al (U S Pat. 6,192,282).

As to claim 15, Crelier teaches and the first virtual function table for the loaded class and the second virtual function table for the loaded class are interleaved with each other (layout shown in fig. 5) and are contiguous with other parts of the class data structure [This is represented by "... parts of the method block 560, fig. 5].

Crelier does not teach class object and the rest of the class data structure includes the class object.

Stoodley teaches a virtual function data structure for different function call protocols (hybrid VFT's), including a class object (for each new class, fig. 5) and wherein a virtual function data structure is contiguous with the rest of the class data structure including the class object (fig. 2a, col. 8, lines 16-28). Therefore, it would have been obvious to place the first and second virtual function tables contiguous with the class object in Crelier. One of ordinary skill in the art would have been motivated to combine the teachings of Crelier and Stoodley because this would have provided backwards compatibility (Stoodley, abstract) between compiled and interpreted calls (different function call protocols).

6. Claims 16-20 are allowed.

7. Claims 3-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2126

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sue Lao whose telephone number is (703) 305-9657. A voice mail service is also available at this number. The examiner's supervisor, SPE Meng-Ai An, can be reached on (703) 305 9678. The examiner can normally be reached on Monday - Friday, from 9AM to 5PM. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-9600.

September 18, 2004



SUE LAO
PRIMARY EXAMINER